

An evaluation of the validity of assessment strategies used to grade practice learning in undergraduate physiotherapy students

Clouder, D.L. and Toms, J.

Published version deposited in CURVE February 2012

Original citation & hyperlink:

Clouder, D.L. and Toms, J. (2006) An evaluation of the validity of assessment strategies used to grade practice learning in undergraduate physiotherapy students. Higher Education Academy Health Science and Practice Subject Centre.

http://www.hsaparchive.org.uk/doc/mp/06-35_lynnclouder.pdf

This paper is made available under a Creative Commons Attribution-Noncommercial-Share Alike licence, full terms can be found at <http://creativecommons.org/licenses/by-nc-sa/3.0/>.

CURVE is the Institutional Repository for Coventry University

<http://curve.coventry.ac.uk/open>



C O V E N T R Y
U N I V E R S I T Y

**An Evaluation of the Validity of Assessment Strategies Used
to Grade Practice Learning in Undergraduate
Physiotherapy Students**

**Final Report to the Health Science and Practice Subject
Centre of the Higher Education Academy**

October 2005

**Lynn Clouder BSc(hons) MA PhD MCSP & Jane Toms MSc
MCSP, School of Health and Life Sciences, Coventry
University**

Acknowledgements

We would like to thank all of the students, clinical educators and visiting tutors who gave their valuable time to be interviewed during the course of the research. Thanks also go to Julie Paine and Nicola Brierley for administrative support.

Finally, we would like to thank Margaret Sills and Helen Bulpitt of the Health Sciences and Practice Subject Centre for their advice and support and the Higher Education Academy for funding this project.

CONTENTS

	Page
Executive Summary	5
1. Introduction	7
2. Background	8
3. Theoretical Context	9
3.1 Pedagogical Issues Underpinning Assessment	9
3.2 Validity as a Concept	11
4. Research Context	12
5. Project Aims and Objectives	14
6. Methodology	15
6.1 Rigour	15
7. Methods of Data Collection	16
8. Ethical Considerations	16
9. Sample Selection, Consent and the Nature of the Sample	17
10. Data Management and Analysis	19
11. Developing Insights	19
11.1 The Student Perspective	19
11.1.1 Assessment Components and Applicability to Practice	19
11.1.2 Assessment and the Motivation to Learn and to Keep Learning	20
11.1.3 Personal Agency and its Influence on Performance Assessment	22
11.1.4 Stress and ‘working hard’	22
11.2 The Clinical Educator Perspective	23
11.2.1 Benefits of Two Assessment Strategies	23
11.2.2 Assessing the Full Scope of Practice	24
11.2.3 Comparative Fairness of Assessment	25
11.2.4 Applicability of Assessment Processes to ‘real life in the NHS’	26
11.2.5 Strategy and Gaining Insight into Students’ Performance	26
11.3 The Visiting Tutor Perspective	27
11.3.1 The Two strategies as Educational Tools	27

11.3.2 Quality Issues Linked to the Visiting Tutor Role	28
11.3.3 Weighing the Costs and Benefits of Rigorous Assessment	29
12. Crystallisation of Findings	29
12.1 What we Learned About Validity?	30
12.2 Assessment as Providing a Framework for Learning	32
12.3 Strategy and Personal Agency	33
12.4 Fairness, Stress and Added Value	33
13. Limitations	34
14. Conclusions, Recommendations and Implications for Practice	34
15. Dissemination Strategy	35
References	37
Table 1 Types of Validity	14
Table 2 Comparison of Mean Student Marks between the Participants and the Whole Group	18
Appendix 1 Semi-structured Interview Schedules	

Executive Summary

The overarching aim of the study on which this report is based, was to explore the validity of assessment strategies used to assess practice-based learning within an undergraduate physiotherapy programme in the UK. As far as we are aware, one of the assessment strategies, a clinical reasoning viva (CRV), is unique to the programme and we specifically wanted to establish whether or not its use was valid.

The context for the research is two-fold. First, there is a perceived need to rigorously assess fitness for practice, driven by increasing pressure for regulation within the professions that has arisen from cases of incompetence or professional misconduct. Second, there is an imperative rooted in current pressures within the health service, and compounded by increased student numbers, to construct assessments that might be considered light-touch or reductionist, the aim being to minimise time commitments for busy clinicians. The challenge of efficiency has been taken up in earnest by higher education institutions and the main remedy has been to develop shared assessment tools.

The tension between the need for rigour and something that is light-touch inspired us to want to explore the validity of our own assessment strategies, to develop our understanding of the contribution of both elements and to discover whether both were necessary in terms of assessing student capability. The theoretical rationale underpinning the need for a continuous assessment of performance based on the observations made by a practice educator, and an oral viva to assess clinical reasoning capabilities is that observation alone can be erroneous and does not test cognitive aspects underpinning practice.

Our focus was on establishing; face validity, content validity, construct validity and criterion-referenced validity of both assessment strategies. We were aware that predictive validity was beyond the scope of the present research. A qualitative methodology was adopted in order to explore student, practice educator and university visiting tutor perceptions of validity of assessment strategies. 55 interviews were conducted in total. These were transcribed and analysed independently by the two researchers prior to crystallizing findings.

The data for each group are presented separately to echo the emphasis in the major themes that emerged. However, there were very close similarities across the groups. ‘Thick description’ is used throughout to illustrate the themes. Interpretation of the data reveals that the assessment strategies possess face, content and criterion-referenced validity. We are less confident in claiming construct validity and have identified the need for further research in this respect. In aiming to be as reflexive as possible we cover other limitations to the current research. However, analysis reveals the perception that together the assessment strategies provide a ‘holistic’ assessment confirming the requirement for both. The necessity for assessment to go beyond ‘showing’ and ‘doing’, to explore the thinking underpinning practice is affirmed.

In addition, the clinical reasoning viva is shown to provide a framework for learning in that it drives learning during the placement, helps to structure learning and is a vehicle for demonstrating depth of learning. There is evidence that both students and educators adopt a strategic approach to assessment but that students can find the

clinical reasoning viva empowering. Finally, although the two components of assessment are perceived to be 'tougher' than assessments completed by students from other higher education institutions students feel they are beneficial in terms of preparation for the realities of contemporary practice.

Our findings provide evidence and support the recommendation that continuous assessment of observed performance should be accompanied by another form of assessment, preferably oral in nature, which specifically tests students' reasoning skills and thinking ability. We conclude by suggesting on the basis of our findings that rigorous assessment if well conceived need not be too demanding on busy clinicians but extremely worthwhile in motivating both students and educators and increasing the credibility and profile of professional practice. We urge colleagues to resist being pressurised into adopting quick fix or light touch solutions to the assessment of practice-based learning and to consider the complexity of validity and the challenges it poses for finding the ultimate assessment tool.

1. Introduction

This report summarises the findings of a qualitative research project aimed at exploring perceptions of the validity of assessment processes currently employed to grade performance in practice at a University in the UK. The context of the study is the practice-based component of a physiotherapy programme and perspectives on validity of assessment processes have been gained from physiotherapy students, their clinical educators and visiting tutors. Assessment of practice-based learning within physiotherapy pre-registration education has been a perpetual challenge yet has hitherto attracted little attention in terms of research potential. Although the study focuses on undergraduate physiotherapy education many of the findings could prove transferable across other health professions and other programmes incorporating a practice, or work-based component.

As well as documenting the research, which was conducted between September 2004 and September 2005, the report shares analyses and in the spirit of inquiry within the qualitative paradigm includes sections written within a reflexive genre. Our immediate aspirations were that findings would inform future development of assessment strategies used within the practice component within the host institution and this has indeed been the case. However, our wider ambitions are to challenge existing ideology underpinning placement assessment and potentially inform curriculum development across the physiotherapy profession and potentially other health care professions.

2. Background

Against a backdrop of government pressure for improved self-regulation and quality mechanisms within the health professions, it has been argued that good professional regulation depends on high quality procedures for assessing professional performance (Crossley et al, 2002). We in turn, argue that the requirement for rigour in assessment processes begins at undergraduate level. Most specifically we believe that the need to establish assessment validity in respect of placement performance within health professional programmes is crucial if ultimately ‘fitness for practice’ and ‘fitness for purpose’ are to be ensured.

It might be argued that it is within the practice setting that students really learn to become the professional people they aspire to become and for most students significant periods of time are spent in practice. Mulholland et al (2005) confirm that all learners involved in completing a programme of study for a health care professional qualification are required to spend a proportion of their time, often up to 50%, learning in practice. Within physiotherapy programmes within the UK approximately one third of the three-year programme is spent in the practice setting acquiring a notional 1,000 hours of clinical experience as a prerequisite to gaining licence to practice (CSP, 2002). That this substantial component of the programme is adequately assessed is vital. However, assessment in the context of practice education has been identified as “a long running and difficult problem” (Chambers, 1998, p.201) across the professions, not least due to the complexity of objective assessment and the difficulties in establishing validity and reliability of assessment tools.

Contextual issues further complicate the assessment of practice-based learning. Concern has rightly focussed on the large number of assessors, their preparation for the assessor role and the increased demands created by this responsibility, which for the majority of clinicians is perceived as an additional commitment. It might be argued that these factors have greater implications for reliability of assessment processes. However, it is possible to identify a more worrying trend fuelled by some of the above concerns arising from political and economic pressures within the current health service that impact on assessment validity. Our observations suggest that the type of assessment deemed feasible within the workplace seems to be becoming narrowed and increasingly reductionist.

In addition, there is pressure on institutions to develop joint assessment forms with neighbouring institutions that might share the same placement resources. In fact, a recently published report highlights the shared assessment tool as an innovation and feature of good practice within physiotherapy (Mulholland et al, 2005). Certainly, such a move might prove to be time-saving in that it “cuts down on pen-pushing”, however, contrary to arguments that efficiencies provided by such tools promote quality in practice (Martell, 2005), we argue that it is easy to become ruled by increasing efficiency and risk compromising quality. We are sceptical that such innovations, the principles of which are being embraced by pockets of institutions across the UK, are underpinned by a sound pedagogical rationale. Generic assessment forms are more likely to lack the sophistication required to assess the complex range of attributes demanded of the undergraduate student. The necessity to fulfil the needs and requirements of all parties is bound to have an impact on scope and rigour of assessment processes yet alignment seems to be occurring without critical debate.

Our aim is not to offend or to be openly critical of other systems and certainly not to undermine the notion of collaboration on issues associated with practice which has clear advantages (Watson, 2005). Rather we attempt to inspire some debate amongst those responsible for the development, and implementation of assessment processes about the quality of those systems and implicitly their validity. Notwithstanding recognition of the need to make every effort to be responsive to changes and pressures that impact in the workplace, to be too accommodating involves the inherent risk of compromising quality. We do not claim to have all of the answers but by subjecting our own assessment processes to scrutiny we make an attempt to dispel the current taken-for-granted approach to assessment of practice-based learning.

3. Theoretical Context

3.1 Pedagogical Issues Underpinning Assessment

The way in which learning is assessed is indicative of what we deem important to know (Chandler, 1991). Within health professional education the enduring drive has been towards behaviourally based learning objectives or outcomes (Brown, 2000; Quinn, 1988). Therefore, if we assess a student on the basis of observations of how they perform clinically we send out the message that it is technical competence with which we are primarily concerned.

Despite acknowledgement that physiotherapy has advanced beyond being a 'skilled craft' (List, 1986) to involve greater cognitive appraisal of our interventions based on theoretical knowledge (Ohman et al, 1999) on the whole, assessment processes do not appear to have reflected this development. Evidence suggests that assessment by observation predominates across the health professions (Wragg et al, 2003; Janing, 1999; Hill, 1998). Similarly, the majority of physiotherapy programmes in the UK currently utilise assessment protocols based on continuous assessment of observed performance by clinical educators (Alexander, 1996). However, observation is best suited to the assessment of procedural, technical and other demonstrable skills (Maxted et al, 2004). Observation protocols might include reference to clinical reasoning or problem-solving abilities but do not appear to lend themselves to exploring these capabilities in any depth, instead focusing on a list of student behaviours or activities which are graded on an agreed rating scale. Only if observation is augmented with direct questioning or discussion can insight into cognitive processes be gained and if time is tight there is a tangible risk that this might not happen.

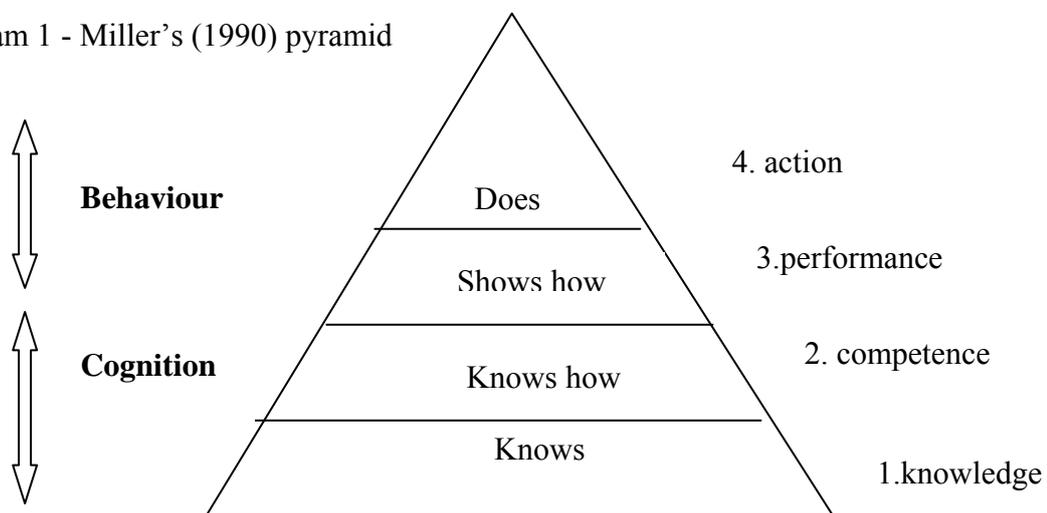
Commitment to assessment for the clinical educator, if reduced to observation of tasks and completion of a series of tick-boxes, is minimal, which might be argued is beneficial. However, observation of one individual by another is inherently problematic due to its subjective nature and reliance on personal judgement (Chambers, 1998; Alexander, 1996). Recourse to the research methodology literature highlights the problems of interpretation and assumptions inherent in observational methods that could lead to bias (Denzin & Lincoln, 2000). However, Adler and Adler, (1994) argue that observation is less idiosyncratic than we might believe in that personal direct knowledge and judgement could be claimed to provide a constant and convincing form of verification: an important reminder that we should not totally devalue observation.

Nevertheless, observation is less than straightforward. Alexander (1996) identified the potential for students to be strategic in attempting to appear confident and knowledgeable as a means of influencing the outcome of the assessment process. Further empirical research indicates a tendency for students to engage in ‘impression management’ (Clouder, 2001) particularly when they are aware of being observed. It is natural to seek to present oneself in the best possible light (Schlenker & Weigold, 1992). Therefore there is a risk that performance if well stage-managed can lead to inaccurate impressions of competence. For instance, the student who appears confident, gets on with the job and is able to relate well to clients might have created a very successful façade that is not easily penetrated unless through direct questioning combined with judicious observation. McKinley et al (2001) highlight potential for covert, as well as overt observation, which they suggest might capture the ‘usual’ behaviour of professionals in action, although it might be argued that an astute student or practitioner will learn to keep up appearances.

In some instances, observation of performance is supplemented by written submissions assessed by university staff or presentations once back on campus that are clearly designed to take pressure away from busy clinicians while trying to preserve some integrity of assessment. However, one cannot help thinking that the cognitive underpinning rationale for the students’ performance is not likely to be captured in what Girot (1993) has termed a ‘real situation’ sense. On the other hand, assessment tools that place too great a bias on the cognitive component of practice do not hold the answer to the assessment dilemma either. For instance, the cognitive based model developed by Benner (1984) has been criticised for its lack of clarity and explicit assessment criteria that fail to relate to specific components of nursing and clinical skills (Nicol et al, 1996; English, 1993). The ideal seems to be to aim to develop an assessment tool that addresses both cognitive and behavioural elements of practice as well as acknowledging both the outcomes and process of learning in the complex milieu of healthcare practice.

Further complications have arisen from conceptual understanding of what exactly is being assessed. For example, within nursing there has been debate about whether competence or performance is being assessed primarily because of lack of agreement of a definitive definition of competence (Chambers, 1998). Miller’s (1990) pyramid (See diagram 1) is an enduring and popular frame of analysis that discriminates between the two problematic terms. Assessment in the practice setting has been said to address the third and fourth levels of the pyramid (performance and action).

Diagram 1 - Miller’s (1990) pyramid



However, we argue that to assume that behaviour is based on understanding and knowledge that Miller suggests is integral to competence is problematic. As has been argued 'doing' and appearing competent can hide uncertainty and limited understanding therefore we maintain that assessment of practice-based learning should incorporate cognitive as well as practical elements. Rethans et al (2002) have critiqued Miller's model, albeit as it applies to qualified practitioners, arguing that performance is a product of competence as well as the individual and the system. The emphasis in the argument for more rigorous assessment systems promoted within this report is on the individual and their capacity for strategic action that can make a mockery of assessments based on 'showing' and 'doing'.

Within physiotherapy, the curriculum framework for qualifying programmes (CSP, 2002) avoids conceptual issues surrounding competence by referring to the development and assessment of students' 'capacity' and 'aptitude' across a range of key areas of practice. For example, within the context of the programme central to this study we refer to performance as an overarching integrated outcome with discrete elements such as professionalism, communication, self management and evaluative capabilities although even these are broad categories that are further subdivided.

The practice setting offers opportunity for students to apply theoretical knowledge and practical skills, safely and effectively, in a real life situation. It affords opportunity for clinical reasoning, problem solving and the development of reflective capabilities as well as the development of subtle attributes, values and attitudes that are inherent to the socialisation process. Therefore, it is important that potential learning outcomes are identified, which cover the range of attributes we wish our students to develop and demonstrate. However, in order to achieve 'constructive alignment' (Biggs, 2003), which is the consistency between teaching methods, learning outcomes, learning activities and assessment, the chosen assessment tool or tools must be broad enough to provide a holistic rather than partial impression of students' capabilities. In other words, the assessment must address learning outcomes as well as acknowledging the learning process. There appears to be too great a reliance on observed performance when it is clear that no one method can be relied upon to adequately assess the complex dimensions of competence and performance (Norman et al, 2002). Furthermore, evaluation should examine whether existing assessments are congruent with the curriculum and relate to all facets of the students' learning experience (Fowell et al, 1999).

3.2 Validity as a Concept

An assessment is valid if it assesses what it is intended to assess. Validity therefore has two component, the intention of the assessor and the nature of what is to be assessed (Bateson, 1984). Having just illustrated the complexity of what we wish to assess in the context of practice-based learning a brief discussion of the concept of validity and its related concepts seems necessary.

An assessment tool must look as though it measures what is intended (Crossley et al, 2002). If so it can be said to have face validity on the basis that it is understandable and perceived as relevant (Gould, 1994) by those using it or being assessed through its use. Face validity is therefore based on subjective judgement and is crucial for both cooperation and motivation depending on whether someone is assessor or assessed. Assessment tools that are intended to give some indication of performance in the

practice setting and reflect the reality of that setting in terms of norms and expectations are likely to have face validity.

Content validity is also a reflection of reality in the setting as it involves consideration of the degree to which it is feasible to adequately sample the domain of content (Benett, 1993). The assessment must encompass all the relevant performance criteria and samples of behaviour that could in theory be assigned to students or be expected to be demonstrated in the workplace if it is deemed to have content validity. Clearly, content validity is difficult to prove if the content domain is complex because the sample of tasks against which the student is assessed may not be sufficiently representative of the domain (Benett, 1993). However, he counters this argument by suggesting that provided multiple sources of evidence are used as a basis for assessment one can feel assured that a broad range of content is addressed.

Construct validity is the judgement on the theoretical aspects of the construct, which is based on research of the construct itself (Currier, 1990). Within the context of this study the constructs around which assessment tools for use within practice-based learning are built are performance capability and clinical reasoning. We have already discussed the problems of defining performance and competence and opted instead for capability across a number of domains. However, clinical reasoning is equally a contentious topic in terms of validation (Downing & Hunter, 2003). Benett (1993) suggests that construct validity might be inferred by considering the relationship of the construct (performance) to other relevant constructs (such as theoretical knowledge) indicating a need for further research on the how grades for academic modules relate to clinical ones.

If the results of an assessment tool compared favourably with another instrument already established as valid (Gould, 1994) criterion-related validity would be established. However, there is often no tool available with which to compare results especially where concepts are abstract. Arnell and Sim (1993) suggest overcoming the problem of lack of a gold standard by using 'member validation' or drawing on the expertise of students to identify criterion against which they should be assessed. This approach puts emphasis on student self-assessment. Alternatively Benett (1993) suggests independent assessment of similar tasks used as the criteria for making judgements about performance in the practice setting by independent verifiers.

Finally, predictive validity involves considering whether the assessment tool accurately predicts the performance of students in their subsequent careers. Proving this type of validity would involve a follow-up longitudinal study of graduates.

This brief account of different aspects of validity helps to define the scope of the present study in relation to the extent to which we can prove validity of our assessment processes. While all aspects are important, some aspects of validity might be of greater interest for certain stakeholders. For instance, employers are likely to be interested in the predictive validity of assessment to cherry-pick the most successful graduates.

4. Research Context

Within the programme at the centre of the study assessment of practice-based learning is consistent in terms of mode across the first six placement modules occurring during the second and third years of the programme. A final placement module which is the culmination of the programme, the outcomes of which focus on the development of caseload management skills is assessed in a slightly different way (Clouder & Dalley, 2002). The format for the six standard placement modules involves two assessment components. If either of the two components is not completed to a satisfactory level the student is referred in the placement and must repeat and pass it at a later date.

The first component focuses on observed performance of the student over a five-week period at the end of which the clinical educator is responsible for completing a summative assessment of performance. This component relies on both objective and subjective judgement. Half-way formative assessment discussions are built in and emphasis is also placed on students self-assessing against the same criteria in preparation for the half-way discussions. The assessment is criterion-referenced and adopts literal grades from 'exceptional' to 'unsatisfactory' across a broad range of attributes that includes: professionalism, knowledge, learning, practical skills, effectiveness and evaluation, communication, self-management, safety, presentation and punctuality. Educators are encouraged to take time to comment on each attribute offering advice on where and how improvement might be made as well as awarding an overall definitive mark for the performance component.

The second assessment component involves a clinical reasoning viva voce (CRV) that occurs during the final stages of each placement. This component involves the practice educator and University visiting tutor in assessing students' clinical reasoning capabilities through a formal discussion of patients with whom the student has been involved. Questioning by the practice educator and visiting tutor can be as wide as is appropriate to the chosen case or cases and will involve the testing of anatomical, physiological and pathological knowledge as well as insight into the individual client's social circumstances, and psychological as well as physical needs. The emphasis is on the student's ability to justify interventions and to share ideas about why, for instance, an intervention that was tried did not work for a specific client. By focusing on specific clients each case is totally different. Students are asked to identify up to four patients/clients for discussion and the practice educator and visiting tutor choose the cases on which they wish to focus the discussion. Clearly this means that students are able to prepare for the assessment, for instance, anticipating questions that they might be asked to some degree. However, the oral nature of the assessment means that the student must be able to think on their feet and to underpin their explanations of interventions with a reasoned rationale that links knowledge to intervention.

The assessment duration is 45 minutes for year 2 students and 60 minutes for year 3 students. Again, the assessment is criterion-referenced and adopts literal grades from 'exceptional' to 'unsatisfactory'. Following a brief discussion between the practice educator and visiting tutor the student receives a mark and immediate feedback. Clearly, both assessment components take time and necessitate specific induction for new practice educators and visiting tutors. In addition, because the viva involves a visiting tutor as well as a clinical educator it is labour intensive and requires more commitment in terms of organisation. Therefore, in the context of busy departments, expanding workloads and economic pressures, anecdotal evidence of the 'fitness' of

the assessment protocol seemed insubstantial, creating an imperative for more formal evaluation research.

5. Project Aim and Objectives

The aim of the study was to explore the validity of the Coventry assessment process, particularly the clinical reasoning viva and to develop an increased understanding of the contribution of both elements of assessment to our overall insight into student capability.

Objectives were to:

- To explore the views of all parties involved in the assessment process, in other words, students, clinical educators and visiting tutors on the validity of the assessment strategies used to grade practice
- To establish perceptions about whether the two assessment components currently used assess different aspects of practice and therefore whether they are both necessary

Table 1 sets out which types of validity the current study is able to address and identifies the level of questioning necessary to gain insight.

Type of validity	Within scope of study	Evidence for proving validity
Face	√	Insight into whether assessment reflects norms & expectations of practice
Content	√	Perception whether or not 2 components of assessment cover different aspects of practice adequately. Insight into range of other sources used to assess performance
Construct	√ partially	Questioning how the 2 assessment components relate to one another. Could be established further through statistical analysis.
Criterion-related	√ partially	Students identify important criteria for each component. Not aimed at an exhaustive list therefore not rigorously attempted.
Predictive	X	Impossible to prove other than through a long term research study

Table 1.

6. Methodology

A qualitative methodology seemed most appropriate for exploring perceptions of the assessment processes from the three alternative perspectives of individuals and their roles within the assessment process. Having weighed recent critiques of interview studies as “contextually situated social interactions” (Murphy et al, 1998, p. 120) and accepted the performative character of interview talk (Atkinson & Coffey, 2002) we opted for one-to-one interviews as our primary data collection tool. This might seem ironic when considered in the light of our not dissimilar argument about erroneous assessments that founder because individuals create facades and learn to act the part. However, while highlighting the cautions that need to be observed in collecting and analysing interview data, Hammersley’s (2003) recent review essay suggests that interviews can still provide insight into what people think and what they have experienced and even as constructions, interview accounts can be accurate representations.

Moreover, the approach of considering the assessment process from a number of alternative perspectives has potential to increase the robustness of our approach albeit that interview data might be construed as constructions of reality rather than real. We are reluctant to use the term triangulation, which has been critiqued on the basis that it has been seen as a means of confirming findings and assumes one fixed point (Richardson, 2000; Sim & Sharp, 1998). In preference, Richardson (2000) suggests use of the term crystallisation to capture instead of a three-dimensional view an infinite number of perspectives. However, Tobin and Begley (2004) argue that the contemporary view of triangulation is less positivistic than might have previously been the case. They argue that since triangulation is said to involve two or more theories, methods, approaches, instruments or investigators the potential for ‘more’ blurs the distinction between triangulation and crystallisation. Perhaps more importantly, a common underpinning assumption that both triangulation and crystallisation provide a means of moving towards completeness of findings by providing a more inclusive view of [the participants] world is key to the argument that robustness is enhanced by taking in more than one perspective.

6.1 Rigour

Rigour is the way in which we demonstrate integrity, competence and legitimacy of research (Tobin & Begley, 2004). Our aim throughout the research and in producing this report is to be ‘thorough, careful, honest and accurate (as opposed to true and correct)’ (Mason, 1996). In other words, we adopt the notion of ‘trustworthiness’ in preference to terms that arise from the rationalistic paradigm. Trustworthiness is demonstrated through credibility, transferability, dependability, and confirmability (Lincoln & Guba, 1985). Credibility is the extent to which the explanation fits the description (Janesick, 2000). Transferability refers to the extent to which findings can be deemed applicable in other contexts. Dependability is assessed on whether the research process is traceable and clearly documented and includes an element of reflexivity and confirmability is concerned with establishing that interpretations and findings are derived from the data. We have attempted to fulfil all of these demands. In addition, as discussed we have employed crystallization and also used member checking. Peer evaluation in the form of a reference group has been employed to

further enhance rigour. The reference group comprising, one physiotherapist, one occupational therapist, a member of Coventry University Centre for Higher Education Development (CHED) and a senior member of staff from another higher education institution have monitored the research.

7. Methods of Data Collection

Semi-structured interviews were used as these are deemed most appropriate when the researcher knows most of the questions to ask but cannot predict the answers, providing freedom for the participants to explain their thoughts in their own words (Morse and Field 1996: 76). A small pilot study was funded internally through the University Small Educational Research Grant Scheme. This contributed to development of the research design and resulted in minor changes to the semi-structured interview schedules, which were largely consistent across the three groups of participants (see Appendix 1).

In semi-structured interviews the researcher conducts a conversation where the participant is the expert whose views are sought (Morse and Field 1996: 82). A conscious effort was made to promote relaxed conversation and for the participants to understand that it was their views that were of interest rather than them feeling the need to conform to any perception of what the University would expect them to say. Careful explanation prior to the interview, locating the interview where the participant felt most comfortable and was most convenient to them, arranging the room to promote relaxed conversation all helped to promote conversation. A similar question style was adopted across all interviews, although interviewees were encouraged to develop their responses in whatever ways they felt fit. The interviews across the three different groups of participants were divided evenly between and conducted by one of the two investigators.

Interviews lasted approximately forty minutes to one hour and were audio taped and transcribed. Participants received a copy of the transcript for member checking to ensure accuracy and authenticity prior to analysis.

8. Ethical Considerations

Gaining ethical approval from the School of Health and Social Sciences Research Ethics Committee was necessary in order to carry out the research. In addition, under the rules of research governance, local Research Ethics Committee (LREC) ethical approval was required to interview NHS staff. Both were rigorous processes that contributed to the research design. In addition, approval was sought from the Physiotherapy Group manager within the University and the Research and Development Department and Physiotherapy managers in departments in which the research was taking place.

Conducting research in ones own workplace creates potential for role conflict as well as coercion in recruitment of students and colleagues both inside and outside of the University. Many strategies were incorporated to minimise this potential and are explained in the following section on sample selection and consent.

9. Sample Selection, Consent and the Nature of the Sample

A purposive sampling method was used to recruit participants. Purposive sampling aims to sample a group of people with particular characteristics in a particular setting (Bowling 1996:338) in this case clinical educators, visiting tutors and students with experience of the placement assessment methods under investigation. For the clinical educators and visiting tutors inclusion criteria demanded registration as a chartered physiotherapist and familiarity with the university assessment process with a minimum of 3 students over the last 2 years. The trusts selected for inclusion were those with a strong commitment to clinical education and experience of the University's students and assessment processes. For the student interviews, timing occurred after the completion of all practice placements. The rationale in delaying student interviews was that if students had completed their practice education modules not only would they have maximum experience of the assessment processes, it would also allow them to be as open and honest in expressing their opinions as possible, knowing they had completed that element of the course.

The process of selection was devised to minimise the opportunity for participants to be coerced into participation but at the same time offer the opportunity to participate to all. The student cohort, of 132 students, was invited to participate through explanation of the research at lead lectures and seminars. Approximately 35 visiting tutors were similarly introduced to the research at a visiting tutor's meeting. Both groups were then left to sign up for the research without the researcher present. For the clinical educators the physiotherapy managers of the NHS Trusts selected received information to be disseminated to physiotherapy staff regarding the proposed research so that all experienced clinicians would be alerted to the possibility of potential involvement. Educational jargon was avoided as far as possible. The participants were then selected at random from a list of experienced clinicians within the Trust. Those selected received a letter inviting them to be interviewed.

Informed consent was sought to ensure individuals had a right of autonomy in terms of involvement in the research. Following the above selection process those recruited were seen as 'potential' participants until contacted in writing and consent obtained. Written information included a 'participant's information sheet' and a 'consent form' that was completed prior to any further contact from the researchers. In the case of the clinical educators their managers counter-signed the form prior to it being returned. All participants were reassured in an introductory letter that the decision to consent or not would in no way affect their progress on the programme or relations with the university. Further consent was sought prior to and following each interview and prior to the release of findings. Anonymity was assured and the ability to withdraw from the research at any time emphasised.

The preparatory phase of the project was longer than expected, resulting in it commencing slightly behind schedule due to delays in gaining LREC approval. However, approval was granted and a total of nineteen clinical educators on three separate sites did consent to be interviewed. Recruitment of clinical educators was not as easy as we had assumed. The different levels of response on the three sites has been informative and prompted us to recognise the importance of capturing people's interest in becoming involved in research. The two groups who were handed

information packs with a brief introduction by their manager were very proactive. The third group appeared to have little recollection of the research being introduced to them highlighting for us how overt management approval of staff involvement was critical in the context of stressful working conditions created by staffing problems. When approached, many of these staff were willing to be interviewed, although they were waiting to be contacted rather than returning the completed paperwork triggering contact from us.

To some of the busy practitioners we met, research appears to be perceived as a time-consuming luxury possibly because this project focuses on clinical education rather than on clinical research. Others have enjoyed sharing their opinions and seem genuinely interested in being kept informed of findings. In terms of experience in assessing undergraduate students there is wide variation from 1.5 years to eight years with several clinical educators having experience of assessment systems other than the Coventry system affording opportunity for comparisons. The range of assessment experience of the eighteen visiting tutors who consented to be interviewed is even greater in that several have decades of experience of a variety of assessment processes. Our sample of clinical educators and visiting tutors could therefore be said to be well informed and able to evaluate the validity of our assessment processes.

Eighteen students consented to be interviewed. Because they had volunteered it was possible that this could influence the nature of the sample population and make them unrepresentative of their fellow students. Therefore, of particular interest was whether the marks that they obtained for each assessment strategy were similar to the average mark for the whole student group. The mean mark for each strategy was calculated for each academic year and compared to the student participant's corresponding mean mark. Table 2 summarises the findings and illustrates that, in this characteristic, the participants were close to the average for the group.

Table2: Comparison of mean student marks between the participants and the whole group

Student group	Year 2 Performance mark (Mean %)	Year 2 CRV mark (Mean %)	Year 3 CRV mark (Mean %)	Year 3 Performance mark (Mean %)
Participants	67	64	68	71
Whole group	65	63	66	69
Participant Difference	+2	+1	+2	+2

10. Data Management and Analysis

All transcripts were anonymised and the two investigators acted as custodians for the tapes and transcripts. Transcripts were analysed by participant group beginning with practice educator tapes, followed by visiting tutor and finally student tapes. The two researchers coded the transcripts independently for each group then shared initial analyses. Together the researchers identified major themes arising from the data as well as the literature for each group of transcripts. This approach has resulted in highlighting the different emphases that members of each group might place on the same issue.

11. Developing Insights

In reporting our research findings we attempt to balance analysis and interpretation with description (Janesick, 2000). Each group is considered separately prior to considering the overarching insights developed, which includes differences and similarities between groups. It is important to note that although specific examples of participants' words are used to illustrate the themes, the themes presented were identified repeatedly across the interviews. Any opposing views are included where they occur.

11.1 The Student Perspective

11.1.1 Assessment components and applicability to practice

The performance assessment was seen as '*essential*' and directly linked '*to the workplace and having to treat patients*'. Students reported that success in performance depended on the '*basic fundamentals*' of practice such as '*open, honest communication*' and '*focussing on the patient*'. The majority of students felt that the relevance of the performance element of the assessment was a '*given*' and that they valued the written comments that were made against each aspect of their performance. Comments were deemed necessary in order to improve, suggesting that students would have been unhappy with a tick-box system devoid of constructive feedback on which they might build.

The CRV (Clinical Reasoning Viva) was also seen as very applicable to practice. Developing the ability to clinically reason was seen as an essential aspect of learning and practising. One student explained '*if you are clinically reasoning you'll try to find the best possible treatment for what that patient has*'. The skills learned actually carrying out the viva, such as verbalising ideas and creating a cogent argument for decisions made, were seen as separate to this and also applicable to practice. For example, one area in which students perceived such skills would be essential was the '*legal environment*' that was viewed as '*increasingly a part of practice*'. Students seemed accepting that they were likely to face legal action at some point in their career and would need to justify their decisions '*as you do in a CRV exam*'. They also felt a more regular use of such skills would be called on when justifying decisions to other professionals, for example at a case conference. The relationship of the CRV assessment with actual practice, as a student as well as when qualified, was seen as strong and one student also identified the '*bringing in of reflection*' as an important part of practice as well as part of the CRV.

Another value of the CRV assessment was that *'if you are clinically reasoning something new you are continuing your CPD'*. This particular student felt that it therefore *'makes us less lazy as a profession'* suggesting that it did not only drive student learning but development as a professional. Another student suggested:

'to some extent it's possible to be a practitioner without really thinking but the opposite occurs through the clinical reasoning exam... it does just make you think and that's good training for the future'.

Several students also felt that the viva prepared them for job interviews and appraisal, expecting that *'as a junior you are going to be questioned about the patients you are treating'*. One student had decided to continue with the CRV preparation post qualifying by *'picking one patient out of the caseload and preparing a [fact] sheet about that patient'* because she found them so helpful particularly to *'get a more holistic view'*.

Students spoke of the benefits of having two differently assessed components that covered different aspects of practice and allowed for a different type of assessment. While the performance component covered *'performance as a whole' or 'entire management; handling, communication, how you treat patients, how you fit into an area and how you work with the team as well as your clinical reasoning that highlights your knowledge'* the viva component was to one student, the means by which she was able to *'put it all together'*. Another student explained, *'it shows your thought processes'* and *'helps you get used to articulating how you've assessed the patient and where if you've been able to, to connect to why you are doing a treatment'*.

Two assessments also allowed for more than one assessor. For example, it was considered advantageous to have a second marker in the CRV as this they felt added rigour and objectivity. One student reported a placement during which they experienced a difficult relationship with the educator and felt *'glad [to] have someone else there in the exam'*. Another student who perceived that a performance mark was very dependent on the quality of interaction with a practice educator considered the viva to be *'a little more objective'*. The viva gave the chance *'to level the playing field a bit'*. Nevertheless, there was recognition that even having two people assessing was sometimes not perfect and that success could depend on the combined approach of the educator and visiting tutor.

11.1.2 Assessment and the motivation to learn and to keep learning

Students made clear links between the CRV as an assessment strategy and the motivation to learn, acknowledging that *'it [viva] forces you to learn stuff which you wouldn't otherwise learn'*. One student said *'I think a lot of the learning I have done on placement is because of those [CRV] exams'* while another admitted that without it *'I think you would just plod along'*. A different student suggested the CRV also encourages you to *'go into a great deal of depth and it helps you develop personally as well as practically'*. Many other students reported that the learning the CRV drove was deeper than placement performance learning which involved so many different components. One student explained, *'it's kind of unlimited the amount you can learn*

[about your CRV patients] *and show you have learnt whereas on a whole placement you can't learn everything about all your patients*'. It was also suggested that the onerous demands of clinical practice could result in treatment choice based on *'someone suggesting it'* or the *'University' approach without being '100% sure exactly how it was working'* and that the CRV drove deeper learning forcing students to discover *'the why'* behind their practice. Another student found the *'clinical reasoning [exam] excellent'* highlighting that although you clinically reasoned *'when treating someone'* the CRV led to going home and exploring more whilst still having the opportunity to come back and *'put your hands on'*. They felt this was a completely different learning experience from a post-placement theoretical essay, which might drive the same depth of learning but separate from the reality of the workplace.

The CRV process was recognised as providing a structure within which clinical reasoning skills were developed and perhaps most importantly, being able to articulate their ideas gave students an increased sense of *'confidence in their competence'*. One student was hopeful that *'if I keep using that structure it will become embedded'* thus further developing clinical reasoning ability. There was a perception that the CRV *'ties it all together'* and *'opened up other things for me that I hadn't thought of'*. Indeed, the assessment seemed to have resulted in some students adopting strategies for success that broadened as well as deepened their learning. One such strategy was to always look for interesting and unusual information related to their cases in recognition that *'people [CE and VT] like to find out new stuff as well'* although this strategy came with a proviso to make sure that if you mentioned something you really need to have researched it well. Another strategy was to *'know every aspect of your patient.....a holistic view'* driving learning about the multidisciplinary team, drug management and psychosocial issues. There was strong acknowledgement of the need to have an holistic awareness for the CRV suggesting that such awareness might not always be considered during performance. It is possible that in some practice settings daily routines still revolve around uni-professional activities and therefore less attention is paid to identifying these elements of student practice.

Students felt that having the CRV provided an opportunity to demonstrate learning that negated the need for constant questioning during the placement. They highlighted that clinical educators would *'need to test you more during the placement'* to judge your reasoning skills and *'a lot of educator's don't ask until you prompt them'* so that disparities were likely to occur. It was also articulated that having the viva at the end of the placement took the pressure off being questioned throughout the placement. Consequently questioning became more formative and less threatening:

'When they do spring questions on youit is quite likely that you're not going to know the answer whereas if they say "alright tomorrow I am going to ask you about such and such" then you know you can go and look it up'.

Many students felt that the necessity for the CRV depended on the placement and that clinical reasoning could be assessed on some placements as part of performance. However, to standardise this across all placements would demand a large increase in the educators' time that would need to be devoted to daily discussions and questioning that would not be deemed feasible in all units. Some students preferred questioning to be confined to the viva. There was a sense that successfully dealing

with ad hoc questioning involved an element of ‘luck’ and the potential for your response to be influenced by ‘*not feeling very well*’ or ‘*overwhelmed by everything*’ and less representative of the true you.

11.1.3 Personal agency and its influence on performance assessment

It seems ironic that students are concerned that educators gain impressions of what one student termed ‘*the true you*’ when for so many students ‘*being assessed makes it hard to be yourself*’. Students developed a range of strategies to help create the ‘right’ impression. The notion of ‘*getting along with your educator*’ was a consistent theme even for, and possibly more specifically, the students who were consistently achieving high marks in both components but this was particularly true for the performance component of assessment. Students reported feeling that their personalities were being judged, ‘*not just my patient treating skills*’. This was considered particularly worrying for one student who felt that ‘*physiotherapy is quite a narrow minded profession*’ explaining physiotherapists seemed to have similar personalities and interests and this resulted in students ‘*being moulded into something they are not*’ and having to ‘*act up to the educator*’.

Several students commented on the need to ‘*play the game*’ when it came to their performance. For instance, one student recalled an educator who post discussion would regularly point out something the student had missed out that the student believed they had actually mentioned earlier on in the discussion. The student recalled:

‘I would think “Did he not hear me?” “Did I not make it clear enough?” but it was just a case of letting them think they were right rather than confront them this [confrontation] does you no favours’.

Within the CRV there was an overwhelming sense of being able to take control and influence the viva by ‘*thorough preparation*’.

11.1.4 Stress and ‘working hard’

One student felt that the quantity of work required for adequate preparation for the CRV added ‘*quite a lot of stress to the placement*’ and several students knew other students for whom the viva was ‘*a big stress*’. However, none of the student participants in this study openly admitted to having found the CRV stressful although it is feasible that they did not wish to discuss what they might have perceived to be a weakness. Conversely, one student ‘*found it quite relaxing because you know your educator, you know your visiting tutor and I just thought it’s more like having a chat about your patients*’. Another student, while acknowledging that they ‘*might be in the minority enjoying these things*’ added that if you ‘*do the work and actually work towards it then you shouldn’t be as nervous*’. This student went on to suggest that those that find the viva most stressful are possibly those who ‘*might not want to do so much [work] on placement*’.

However, it was suggested that in the third year to have to prepare to discuss ‘*four different patients with usually four different conditions*’ compared to two in the

second year was *'a bit fraught'*. Another student suggested that she became *'demoralised'* because *'I really researched all four and then was only asked to do two of them'*. When four patients were discussed students felt they were covered more briefly and they lost the opportunity to demonstrate their *'breadth of knowledge'*.

Students were very aware of the assessment procedures of other universities whose students they came into contact with and reported feeling they worked harder than other students. One student stated *'when I first found out that was all they [other university students] had to do I felt quite annoyed'*. Feeling that they had to work harder applied where other Universities assessed performance alone but was also applicable in relation to the degree of difficulty where there was an additional assessment strategy. For example, the CRV was seen as more difficult than a presentation as students felt a presentation focussed the learning to *'one specific thing'*. However, many students reported that by the third year placements such annoyance had subsided because they felt, compared to the other students, they were coming out *'a more rounded and developed student rather than just getting through'*. They also felt more prepared for practice, as was discussed previously, and therefore didn't *'resent'* the extra work as they thought they would *'be better clinicians as a result.'*

11.2 The Clinical Educator Perspective

11.2.1 Benefits of two assessment strategies

All of the educators felt that both assessment strategies were necessary, although one queried whether the second strategy needed to be an exam, and some others, whether a clinical viva with a patient would be a stronger assessment. As with the students, the continuous performance assessment was, without question, seen as essential. The CRV promoted most discussion. The two together was seen as covering *'most of the areas you want to be looking at'*, as well as beneficial in terms of fairness of placement assessment and for promoting learning whilst on the placement.

Regarding fairness, it was felt important to have both assessment strategies as *'the continuing assessment over the entire placement'* suits some students, where *'others shine more at the big event [the CRV]'*. Thus both together the assessments were considered to offer *'a more rounded view'*, to have potential to *'bring out the best of the student in all their areas'* and gives students *'the chance to show their strengths'*. The CRV was also seen as a particular *'opportunity'* for students *'who are lacking confidence in the clinical situation to show their strength'*. Many of the educators supported this point highlighting a student *'who surprises you with their depth of knowledge and understanding when they come into the viva'*. Conversely, another educator found there were students *'who I thought would perform better in the clinical reasoning'* than they actually did and this led to reflection on the difficulties of assigning performance marks in some of the different categories.

Many of the educators acknowledged some difficulty in assigning marks, particularly when questioning students in the *'informal'* clinical environment *'it can be hard to know ... what they are taking off you'*. However, the CRV was seen as a *'standardised format'* that took away the *'fear of assuming'* providing clear demarcation between

student knowledge and own prompting and thereby more objective. One educator summed up this point in stating:

'I like the clinical reasoning exam, I think it is a good way of pulling together all their knowledge and being able to formally assess that and push them a bit further. Rather than them just being tested in an informal situation where you can lead them a lot more and assume they know things'.

However, it was recognised that the CRV did not always suit students. One educator recalled a particular student who *'had been absolutely brilliant'* on placement but under pressure *'their minds just go a bit blank'*.

The CRV was perceived to promote learning on placement because it gave students *'more motivation to actually do the work'*. One educator felt that the students *'must hit the books for a couple of weeks before hand'* to get through the exam and that without it you could probably *'get away with doing a little less work'*. In fact, most educators agreed that the CRV *'makes them [the student] really work throughout the placement'*. Indeed, one educator put this opinion quite strongly saying:

'If you just had to produce pieces of coursework, turn up between 9 and 5 for five weeks and show you weren't unsafe you would probably get people sneaking through much easier'.

The benefits for learning were also seen to extend to the way the CRV influenced how educators engaged in teaching during the placement. Several said it took the pressure off finding time to question students during the placement and without it they *'would need to push that much harder'* and *'question them [students] more'*. Another suggested that having the hour at the end of the placement where you could question the student allowed for a more relaxed atmosphere on the placement. There was less *'putting them on the spot'* resulting, in her opinion, in greater potential to optimise learning.

11.2.2 Assessing the full scope of practice

Although both components were seen as necessary, for the reasons above, they were also seen, by all, to be assessing different attributes. There was a general perception that *'you do need the interaction between both [assessment strategies] to actually show different aspects of aptitude and performance'*. The performance component was described as *'lots of different sections'* and based on their *'general performance more kind of how effective it is on their placement and not the knowledge itself'*. The latter point was reinforced by another educator who saw the performance mark as relating to *'their growth'* on placement. This comment acknowledges what others saw as development over time that takes in *'the practical [aspects] and how they are with patients that is not so apparent within the CRV'*.

'Some overlap' between the two assessment strategies was acknowledged. Clinical reasoning ability was considered as inherent to performance; however, some distinct differences regarding what was required for the CRV were identified. These differences included the skills required to actually do the CRV and the depth of

clinical reasoning the viva demanded. Some of the skills were seen as on *'the oral side, trying to express your self, thinking on the spot'* and *'performing under pressure'*. It was also seen as assessing the quality of students' academic work, how they were at interpreting information and extracting information from clinical notes. The CRV was seen as not just a matter of their *'depth of knowledge and ability to apply it'* but their ability to present it and use it to answer questions that may be asked *'in a different way from what they expected'*. However, there were warnings to be aware of context and remain mindful of the *'snap-shot'* nature of the assessment strategy, which as already highlighted might prove beneficial for some student and less so for others. *'It's only one hour of one day'* when compared to impressions of the student developed over a 5 week period.

Nevertheless, the CRV was said to require a different depth of clinical reasoning ability because *'they can't get away from the fact they've got to get to know that patient'* and *'know things inside out'*. *'Really thinking thoroughly about your patient'* and understanding them, including *'thinking holistically about them'* and *'not just looking at the physio'* but also the input of other team members highlights the potential depth of understanding required. To some extent understanding reflects *'how much reading they have done'* although the value of talking to the patient and other staff cannot be underestimated. One educator believed:

'The CRV mark can often differentiate between a good and confident physio and somebody who is actually going to be a high flier'.

When asked whether they could assign a mark for clinical reasoning abilities on the basis of ongoing insight developed over the duration of the placement, negating the need for a viva, one educator summed up what many others reported. It was felt that *'you can get quite a fair idea'* of a student's clinical reasoning capabilities during placement but *'you can't guarantee it'*. Personalities of the student and the educator, *'how well you get along with each other'* and how much time you have had with the student were all factors that seemed to jeopardise gaining clear enough insight into how the student was thinking about what they were doing in practice.

Overall, the relationship between the two assessment components was seen as strong by most of the educators. The general opinion is reflected in the observations of one educator:

'I don't think you get many people who are fantastic at clinical reasoning and useless [in terms of] performance. You can either say they are good at both or they are good at performance and then let themselves down in the clinical reasoning, or they're useless at both'.

11.2.3 Comparative Fairness of Assessment

Fairness of assessment was considered by the educators in the context of comparisons with their own experiences of being assessed as students, which was more recent for some than for others, and with known assessment strategies employed by other universities. Some had concerns that it was tougher than other universities and therefore less fair. One person suggested *'it [the CRV] can seem a bit harsh'* especially in the third year when 3 or 4 patients need to be prepared. However,

another felt it was fairer than some establishments assessment strategies stating *'it isn't harder because the student has a chance of doing well in one of many areas they are being assessed on, it's not all hinging on one thing'*. Where some programmes included an end of course 'clinical exam' which involved assessing a patient *'that could be anything'* this was seen as harsher due to the possible complexity of the unseen patient and the one-off nature of the assessment.

One educator recalled her own experience of being assessed on placement as *'very subjective'* largely because she felt *'assessment criteria weren't very justified'*. She considered the Coventry strategies to be *'much more objective'*. The notion of perceived subjective judgement was reinforced by reference to the *'relationship with educators as being part of the marking'* and the potential to create impressions such that, *'if you looked like you knew what you were doing and could perhaps blag your way very easily, you got a good mark'*. Another educator, who recalled having *'had it quite easy on placement'*, thought that the inclusion of the CRV meant *'you are getting a true reflection of what [has been] learned on that placement'*. There was a feeling that the strategies used resulted in the students being pushed to *'quite a high standard'* and that there were *'high expectations'* of the students throughout. The feasibility of a less formal, more continuous approach to assessing clinical reasoning was raised by one educator, as was the possibility of the viva situation involving treating a patient. However, there were acknowledged shortfalls to both of these possible alternative options to the CRV and the majority felt the CRV was appropriate for the reasons previously discussed.

11.2.4 Applicability of assessment processes to 'real life in the NHS'

The performance element of the assessment was deemed highly applicable to all aspects of functioning within the complex scope of physiotherapy practice. The viva experience was seen as reflecting the *'under pressure'* aspect of practice for which, students needed to be trained to *'be able to give oral comments in a clinical reasoning way because that's what happens in real life in the NHS'*. This was reiterated by many of the educators who maintained it *'enables the students to present their patients in a pressurised environment'* and prepares them for *'MDT meetings where you are asked for your opinion and you've got to back it up'*. Others highlighted the fact *'everything is researched based now'* and they felt the CRV encouraged students to *'go and research things'* and *'to help them know how to read around'*. Another educator saw the CRV as the *'why'* behind the *'doing'* and the *'evidence behind things'*, which is *'what we are forever being asked to [provide] in practice'*. In fact, educators saw preparation for the CRV as beneficial in promoting their own continuing professional development (CPD) and also identified *'the bonus that you are learning as well'* during the viva.

11.2.5 Strategy and gaining insight into students' performance

Educators reported many different ways of gaining insight into student performance on placement. Observation was the obvious key method, although shortcomings such as the recognition that students generally *'try to come across as best as they can to their educator'* were acknowledged. Strategies to overcome the tendency for students *'act the part'* and difficulties in observing in departments that are not open-plan included treating in the adjoining cubicle and *'listening to what they are actually*

saying' to gain insight. Unseen and ad hoc observation and talking to other team members who had observed patient and staff interactions were deemed invaluable. The wide range of activities that were often observed, included *'multidisciplinary team meetings, the initial assessment, communicating with the other team members on a day to day basis, seeing how they interact with patients'* and *'looking at documentation'*. Patient outcomes were also considered as an indicator of student performance. Face-to-face discussion focusing on treatment decisions was used regularly although the degree of insight that was gained into the students clinical reasoning capabilities was seen as *'variable'* depending on the *'pressures you are under with your caseload'*. It was recognised that to gain true insight *'you would have to be very disciplined to actually sit down and get as much information out'* as possible.

11.3. The Visiting tutor perspective

The visiting tutor perspective very much repeated the perspectives of the other two groups. It did, however, reflect their more academic role in the clinical placement education of students. It is consequently this aspect that has been focussed on as it provides additional insight into the two assessment strategies. The visiting tutors discussed both strategies in depth regarding what was being assessed in each and their relative educational merits. Before going on to describe their thoughts it is important to note that, as with the students and educators, all of the visiting tutors expressed the opinion that both strategies were necessary.

11.3.1 The two strategies as educational tools

The placement performance element of assessment that *'assessed over a time span'* was seen as essential and felt to be strengthened as an assessment tool by the *'criterion led assessment marking guidelines'* that are provided. It was seen as a *'rounded assessment'* that focused on *'skills'* and *'competencies'* which included rapport building, rationale for treatment and clinical problem solving. Many visiting tutors were able to list all of the different sections of the performance mark to illustrate what was being assessed: professionalism, written and verbal communication, safety, learning and knowledge, practical skills, effectiveness and evaluation. The performance component was seen as assessing the student's ability *'to be a clinical practitioner'*. It was also seen as a measure of how well the student *'has slotted into that placement'*.

A very experienced visiting tutor felt the educators gain *'a very realistic assessment of the students'* by *'observing in its widest sense'*. Others felt the performance assessment strategy had some areas of weakness and one described it as *'probably quite subjective'*. Areas of concern included students who *'don't show what knowledge they have got'* and educators who *'don't always get the best from them'*. It was also recognised that when judging what the performance mark told you about a student you had to allow *'for the personality of the CE which does come into it unfortunately'*. Indeed, one visiting tutor commented that *'we tend to like people who are like ourselves'* so when a student models themselves on their educator, by observing and copying them, the student *'could get a better mark'*. This *'human factor'* was seen as more significant in the performance component of the assessment strategy and included educators' *'different expectations'*; whether the educator viewed

the student as a *'treasured resource'* or *'another hardship'* and the *'strategic student who is pulling the wool over educator's eyes'*.

Comments on the CRV very much reflected the student and educator comments in that it was seen as assessing the *'why'* behind treatment, the student's ability to perform *'under pressure'* and *'how well they are making the link'* between theory and their practice. The viva was also thought to test *'ability to take several patient issues and discuss them in an open format with two examiners'*. It was seen as providing insight into how well students *'really know their patients'* and that their knowledge takes in a *'wider understanding'* of for instance, *'holistic aspects or psychosocial aspects'*. The visiting tutors also felt that *'retention of information'* was being assessed, although not in terms of simply recall, rather, how the students *'extract it in a relevant way, a logical way, a clear way from the large amount that is in their head'*. There was a suggestion that the CRV told you about the students' *'intellectual capability'* because no matter how much some are coached they can't *'think in a complex way, they can't make those intellectual links'*.

The CRV was perceived to be a way of assessing the student's clinical reasoning abilities in more depth than through performance alone; *'it allows you to test deep learning'*. It was also seen as a more *'valid'* and *'reliable'* way of assessing clinical reasoning for the same reasons as those suggested by the educators in that it is easier to be clear on what *'the student knows'* and *'separate out the relationship'* that has developed over the five weeks. The visiting tutors had observed that the viva influenced the educators' teaching during the placement suggesting that *'it steers the educators into doing more clinical reasoning on placementchallenging them [students] as they go'*. This seems to contradict student and educator comments about a reduced need for questioning, although in agreement with educators, the visiting tutors attributed more free discussion on placement without the constant feeling of being assessed, to the end of placement viva.

Together the two components were considered to provide *'a much better holistic assessment'* of the student than a single assessment. One visiting tutor saw the two components as *'a more complete assessment of their clinical ability'* balancing the *'skills based'* elements of the profession with the *'academic'* and *'reasoning'* side. Some overlap between the two was recognised, particularly regarding rationale, problem solving and researching the evidence base, but the overlap was seen as positive. The additional strategy of the CRV was felt to *'empower'* the student because it gives them *'an element of control of what they want to put into the viva'*. Indeed, one VT felt quite strongly that *'if you take out the CRV you will almost devalue the assessment'* and, another, that students *'sometimes role play so well they can mask an inadequacy that the viva will pick up'*. A further VT supported the latter point by saying you can *'shine a light in all of the corners'*.

11.3.2 Quality Issues Linked to the Visiting Tutor Role in Assessment

The visiting tutors identified that they very much saw their role as one of quality enhancement and that the CRV was a particular vehicle for this. One visiting tutor felt that the students *'may value [the CRV] assessment more'* because the visiting tutor can give both *'moderation and uniformity across the placements'*. Another saw it as giving *'more purpose to [her] role'* making it not only pastoral but adding a *'different*

aspect to the education’ that we can *‘consolidate and confirm often what is actually delivered’*. Within the context of the CRV the visiting tutors role was to *‘guide and reassure clinical educators’* and to ensure *‘they knew what we were looking for’* regarding *‘concept and perception of clinical reasoning’*. Visiting tutors felt it was their responsibility to *‘ask the right questions’*, to *‘fill in the gaps’* to ensure the breadth of clinical reasoning was covered and to generally *‘get the best out of the student’*.

Many visiting tutors discussed how they ensured educator expectations were at the level appropriate for the student’s educational stage. This was perceived important since educators were said to sometimes *‘expect [student] knowledge details to be too high’* where *‘visiting tutors know they are only second year and shouldn’t really need to know this higher level stuff’*. The visiting tutor was also the means of enhancing objectivity within the CRV by virtue of being *‘slightly more distant’* and *‘less emotionally involved’*. Not having invested five weeks work into the student allowed the visiting tutor to *‘take a step back’*, which was viewed as particularly valuable in the event of having to deal with a failing student. This was recognised as a difficult area in which the visiting tutor brought *‘expertise’* in assessment, *‘the ability to question students, and the ability to probe’*. Where the *‘courage to fail a student’* was called on it was made easier by the greater distance from the student and placement and because of that *‘clinicians look to you to say “well actually that is not going to pass”’*.

11.3.3 Weighing the Costs and Benefits of Rigorous Assessment

Many of the visiting tutors had experience and or knowledge of assessment strategies employed in other programmes therefore could make comparisons. As identified by the students and the educators, having two components, one of which was a viva, were seen as *‘tougher’* and *‘more stressful’* for the students but the *‘edge’* it gave them was seen to outweigh that extra pressure. One visiting tutor justified the stringency of the strategies by maintaining *‘I don’t think we challenge them to a greater degree than we should do because we owe it to the general public that they should be competent’*. The CRV exam was seen to reflect current practice and certainly one visiting tutor felt that such a format should be part of current practice possibly through *‘clinical supervision’* post qualification. She observed that when you are busy *‘you are on a treadmill and just doing and sometimes the thinking behind what you are doing can get lost’*. Overall, the educational stringency of the CRV was applauded because it was perceived to drive placement learning in a valid way. It was considered essential to invest in assessment even though it might put more pressure on students, educators and the university because without it the placement element risks being seen as *‘the Cinderella part of the course’* when it is possible to argue that it is the most crucial to student development.

12. Crystallisation of findings

The themes presented in the three preceding sections will give the reader some indication of the richness of data that was derived from the study. We have habitually been forced to remind ourselves of our original research aim which was:

‘To explore the validity of the Coventry assessment process, particularly the clinical reasoning viva and to develop an increased understanding of the contribution of both elements of assessment to our overall insight into student capability’.

Objectives were to:

- To explore the views of all parties involved in the assessment process, in other words, students, clinical educators and visiting tutors on the validity of the assessment strategies used to grade practice
- To establish perceptions about whether the two assessment components currently used assess different aspects of practice and therefore whether they are both necessary

We attempt in this section to discuss overarching themes that emerged while not losing sight of the different emphases and standpoints of the three groups of participants who clearly might have had different vested interests in sharing their ideas. We begin by discussing our findings relating to the different types of validity then discuss a number of sub-themes that emerge from those findings that illustrate how assessment pervades the entire learning experience.

12.1 What We Learned About Validity?

Our initial aim was ambitious. We set out in Table 1 the different types of validity, the evidence that would be needed to prove each type and our beliefs about whether or not we could establish each type of validity with regard to our assessment strategies. Without doubt we feel we have illustrated through presenting data from all three groups of participants that we have firmly established the face validity of both assessment components. Criteria by which students are assessed are clear and perceived as relevant reflecting the norms and expectations of the practice setting. For example, the link made by a student between the clinical reasoning viva and *‘finding the best possible treatment for what the patient has’* demonstrates its applicability to practice. In addition, the suggestion by an educator that *‘be[ing] able to give oral comments ...because that’s what happens in real life in the NHS’* reflects the demands of contemporary practice. The CRV was widely perceived to be an appropriate means of assessing clinical reasoning capabilities. As one student argued, *‘talking is the only way they [assessors] can know what you’ve been thinking’*. Criteria by which on-going assessment is based were taken as ‘given’ and observation of performance was widely accepted across all of the groups. Cooperation and motivation are high amongst all groups involved in the assessment process, a point to which we will return presently.

Proving content validity was deemed to be within the scope of the study and we also feel that this has also been achieved. To have content validity the assessment components must encompass all relevant performance criteria and sample behaviours feasible within the workplace. Benett (1993) argues this is difficult to ensure where the domain is complex as is the case in the context of this study. However, he suggests that ensuring that multiple sources of evidence are used as a basis of assessment is a means of countering complexity. Educators and visiting tutors readily identified multiple sources of evidence that were utilised as a means of supporting

direct observation of the student. For example, seeking the opinions of other members of the team and checking documentation. However, the presence of the two assessment components perceived to be assessing different capabilities, despite some overlap, seemed to contribute heavily to the feeling that students were being assessed across all relevant performance criteria. There was a perception by educators that the two assessment components together covered *'most of the areas you want to be looking at'*, provided a *'more rounded view'* and had the potential to *'bring out the best of the student in all their areas'*. Likewise, the students appeared to feel that whereas the assessment of performance considered *'performance as a whole'* the CRV *'put it all together'* and encouraged depth and breadth of understanding. Certainly, there is some evidence that the CRV has added value in terms of equipping students for verbalising their ideas and defending their practice orally, which is again a point to which we will return.

Construct validity, based on judgement about the theoretical aspects of the construct has been less easy to even partially address, as we had hoped to do within this study. There was a shared and very clear understanding of performance in that it meant *'Are they safe? Are they effective? Are they professional?'* There was also good understanding of the demands of the clinical reasoning assessment and what was being assessed. However, where we fall down is in failing to consider our conceptions of clinical reasoning and what we think we are encouraging students to practice in the context of the theoretical construct. We could side step the issue by calling our assessment a *'patient management viva'* or *'caseload discussion'* but what we really want it to do and what it seems to do to a certain extent is to mimic clinical reasoning processes that occur in practice. Considering the relationship between constructs such as performance, clinical reasoning and knowledge would provide a means of inferring construct validity (Benett, 1993). We asked all three groups of participants how the two assessment components related to one another and went as far as gaining a general agreement that performance and clinical reasoning did relate to one another. One educator talked about the *'why'* behind the *'doing'* and another explained the relationship in terms of predictability of assessment outcomes in stating:

'I don't think you get many people who are fantastic at clinical reasoning and useless [in terms of] performance. You can either say they are good at both or they are good at performance and then let themselves down in the clinical reasoning, or they're useless at both'.

Similarly, a student attempted to explain the relationship between knowledge and clinical reasoning in saying *'without knowledge you cannot clinically reason so the viva is very good at making you get the knowledge in order to clinical reason'*. She is suggesting that knowledge is a precursor or essential building block on which reasoning is based. We might assume that by knowledge she means pathological, physiological and anatomical knowledge had she not qualified her understanding by suggesting that accumulating knowledge is an ongoing process through the placement *'during which she would pick up on different things'* reminding us that knowledge is in itself complex and multifaceted.

We have concluded that much of what we understand about how the concepts of performance, clinical reasoning and knowledge relate to one another is largely implicit within the data rather than explicit suggesting that we would need to engage

in further research to really understanding how educators, visiting tutors and students conceptualise the concepts and then to establish relationships.

It was not possible to compare both of our assessment tools with another instrument that has already been validated in order to prove criterion-related validity. We therefore drew on the expertise of students in considering whether the criteria against which they were assessed were appropriate. The students found the criteria highly appropriate mainly due to their perceived relevance to practice. In addition, educators and visiting tutors identified means of ensuring independent judgement on similar tasks such as gaining feedback from colleagues to inform assessment of the performance component of assessment and the presence of two independent assessors within the CRV. We therefore feel justified in claiming that our assessments have criterion-related validity, although we acknowledge that students have not been targeted to produce an exhaustive list of possible assessment criteria and further research might address this by adopting a more rigorous approach to establishing such a list. Finally, to ensure completeness, we briefly mentioned predictive validity within Table 1. We made no attempt to address this type of validity on the basis that it would be impossible to prove other than through a long-term research study.

12.2 Assessment as Providing a Framework for Learning

As far as students are concerned assessment is the curriculum (Ramsden, 1992), which means that they will learn what they perceive is necessary to achieve success. The assessment processes used in the practice-based learning components of the programme at Coventry University appears to provide a sound framework for learning from practice experience. The performance component of assessment is deemed '*essential*' and is related directly to the practicalities of the workplace and '*having to treat patients*'. However, the CRV is perceived as providing a structure that students value because it '*forces you to learn stuff that you otherwise wouldn't learn*'. In other words, it makes students develop both breadth and depth of thinking that they feel they would otherwise not do because they would be tempted '*to plod along*'.

Structuring clinical reasoning through assessment appears to give students a template for '*working through things methodically*' and motivating them to want to develop an in-depth understanding of their patients problems, helping to ensure that reasoning processes are embedded in their practice. The structure of the CRV also seems to increase students' confidence in their decision-making skills. Several students suggested they would continue using the format after completing the programme, highlighting how the viva had promoted the idea among students that continuing to learn was essential for achieving and maintaining competence therefore embedding the necessity for engaging in continuing professional development. In addition, one educator reported that she had adopted the format of the CRV for in-services training of junior staff in her unit as she found it a useful way to structure their learning.

As well as driving learning, the viva is seen as a means of demonstrating learning that takes the pressure off being questioned, for the student, and making time for in-depth questioning for the educator, during the placement. Both groups feel that this potentially leads to a better and more relaxed learning experience. Having expected that in the context of busy workloads and increased pressures on senior staff, educators might question the necessity of setting aside time for the CRV we found

conversely that the viva was deemed more efficient as well as effective for gaining insight into clinical reasoning capabilities.

12.3 Strategy and personal agency

We highlighted early in the report the potential for students to be strategic in their approach to assessment and there was evidence that student possess a sense of personal agency in presenting themselves in the best possible light. As has been argued previously (Adler & Adler 1994), observation in its widest sense, clearly provides a constant and convincing form of verification of student performance. What was previously less clear was the extent to which educators and visiting tutors use their own strategies to gain insight into students' capabilities with respect to assessing performance over the duration of the placement. One visiting tutor suggested that despite the potential to gain insight through seeking the opinions of other staff members, reading documentation and covert listening to student/patient interactions, the '*strategic student*' can '*pull the wool over educator's eyes*' although having the CRV was seen as a means of ensuring a more '*holistic assessment*'. However, ironically, despite the potential for searching questioning that really gave insight into how well the students knew their patients the CRV does appear to '*empower*' students, who admit it promotes '*confidence in their own competence*' and helps them '*develop personally as well as practically*'. This can only be a good thing in terms of competence and readiness to practice in the context of contemporary practice when junior therapists' are expected to be fit-for-practice immediately on qualification.

12.4 Fairness, Stress and Added Value

The issue of the fairness of assessment strategies emerged from both students and educators, although it was less evident in the concerns of visiting tutors. In fact, the stringency of assessment was supported by visiting tutors as a perceived means of protecting the general public from incompetence, suggesting that we might question the concept of fairness in terms of, 'to whom are we being fair if our practice-based assessment is not stringent?'

In the context of having to work hard, and possibly harder than students in other institutions, students had rationalised the initial perceptions of hardship by believing that it had potential to make them '*better clinicians as a result*' with '*an edge on other students*'. There was a perception of becoming '*a more rounded and developed student rather than just getting through*'. Interestingly, while both educators and visiting tutors spoke of the viva as a stressful form of assessment, students acknowledged the potential for stress but suggested that the way to counteract stress in the viva was through thorough preparation. Successfully justifying patient management in the viva was experienced as affirming for students, who made connections with being given opportunity to develop oral skills necessary in daily practice and in the event of having to defend their actions in a legal sense. In addition, students perceived that having experience of oral assessment was beneficial in terms of preparation for job interviews. Although, articulating ideas under pressure and displaying personal attributes such as self-confidence, self-awareness and adaptability were developed in the context of clinical reasoning it is clear that the CRV has added value in terms of the development of student in the wider sense.

13. Limitations

We stated early in this report that by subjecting our own assessment processes to scrutiny we wished to attempt to dispel the current taken-for-granted approach to assessment of practice-based learning. We have attempted to be honest and to show that our ideas are still developing. However, we acknowledge that the research has not been conducted independently and that this opens us up to criticism in terms of potential bias at every stage of the research from sample selection to identification of themes. We have made attempts to remain reflexive, to cross-check our thinking throughout stages of data analysis and to present opposing views where they have occurred. However, the findings within this report reflect our interpretations developed from our own standpoint and the reader will need to take this into account in making their own interpretations of the report. The study was relatively small and qualitative in nature, and adopting a mixed methodological approach could enhance further work.

Notwithstanding the lack of researcher independence, possibly the greatest limitation to the current study was our assumption that we all share a common understanding of what is meant by performance, knowledge and particularly clinical reasoning as concepts, which limits potential to consider the construct validity of our assessment process. A further study should focus more closely on exploring theoretical understandings and common conceptions held by educators, visiting tutors and students. Alternatively, as Bennett (1993) suggests it might be feasible to infer construct validity by considering the relationship of clinical reasoning (the construct) to other relevant constructs, such as knowledge, by comparing grades for clinical reasoning with performance grades for academic modules. However, since clinical reasoning is a complex cognitive skill requiring more than knowledge this might not be helpful.

In addition, despite the argument that reliability and validity go hand-in-hand and an unreliable result cannot be valid because whatever it measures it does so inconsistently (Crossley et al, 2002) we have not considered reliability in the context of this study and therefore it could be argued that we present only a partial view of our assessment strategies.

14. Conclusions, Recommendations and Implications for Practice

On the basis that the nature and content of assessment strongly influences learning strategies (Crossley et al, 2002) we argue that the educational value of assessment of practice-based learning is being underestimated where it is reduced to observation of performance. Our findings provide evidence and support the recommendation that continuous assessment of observed performance should be accompanied by another form of assessment, preferably oral in nature, which specifically tests students' reasoning skills and thinking ability. In fact, there is clear justification for an oral component to the assessment of practice-based learning. By playing down assessment of practice-based learning we devalue it and consequently devalue the practice component of professional programmes. Conversely, increasing the emphasis and involvement of clinicians in valid assessment not only motivates them and validates their role in developing the next generation of practitioners; it increases the credibility and profile of professional practice.

Our findings substantiate the claim that there is complementarity between our two assessment strategies and that both are necessary to ensure a holistic assessment of student capabilities. However, one of the outcomes of the research that has already been implemented is a reduction in the number of cases that students are expected to talk through in the year 3 CRV. Our initial critique of Miller's (1990) pyramid has been supported by findings that suggest we should not simply test 'showing' and 'doing' on the assumption that behaviour is based on knowledge and understanding. We need an assessment system that tests both in the context of the 'real situation' (Giro, 1993).

Furthermore, both assessments are deemed valid by all stakeholders in that they are perceived relevant to current practice, they assess the full scope of practice, they involve independent assessors and there is at least a working clarity about the conceptual underpinning of the strategies that could be explored further in future research. The oral viva provides a framework for learning, which mimics practice, motivates students and is perceived to prepare students for the rigours of contemporary practice.

From our point of view, assessing students in practice need not be a 'difficult problem' (Chambers, 1998, p.201). We recognise and respect the pressures placed on clinicians within current health services for whom the responsibility of educating and assessing students is an additional commitment. However, consequent pressure on higher education institutions to adopt a light-touch approach to practice-based education by rationalising demands and most worryingly reducing the rigour of assessment should in our opinion be resisted. The clinicians involved in this study are no less busy than colleagues across the UK, they acknowledge that the assessment strategies they use are rigorous, yet they make no complaints about having to commit inordinate amounts of time to assessment processes. Neither do they complain about 'pen-pushing' (Martell, 2005). Maybe it's simply what they are used to doing but if they can do it why can't others?

We currently have no way of knowing whether our students do, indeed, have '*the edge*' on students from other institutions and we have made no attempt within the current study to consider the predictive validity of our assessment strategies. In other words, we cannot claim that the strategies used predict performance of students in their future careers; a claim that could only be explored through a longitudinal study. However, what we can say with confidence is that, our students feel prepared to step into practice, they feel confident and they feel they have '*the edge*' so maybe that is the best start we can possibly give them.

Dissemination strategy

Following peer review of this report by the Subject Centre reviewers and our 'reference group', local dissemination of the findings from the study on which this report is based will take the form of a presentation at one of our twice-yearly Educators Forums. Proceedings from these forums are published in the form of a newsletter circulated to all physiotherapy placement providers across the West Midlands and Thames Valley Regions. With the permission of the Health Science and

Practice Subject Centre the report will also be placed on the educator website for ease of access.

National dissemination across a range of health professions will occur through a paper presented at the Higher Education Academy Health Science and Practice, Practice Learning and Support Special Interest Group Workshop in spring 2006. There is potential to present findings in a profession specific context at the Chartered Society of Physiotherapy Annual Congress and/or at one of the World Confederation of Physical Therapy Conference in 2007. Otherwise, papers based on this report will be written for publication in peer-reviewed journals.

References

- Adler, P. A. & Adler, P. (1994) Observational Techniques. In N. K. Denzin, & Y. S. Lincoln (Eds.) **Handbook of Qualitative Research**, Thousand Oaks, CA, Sage, pp. 377-392.
- Alexander, H. A. (1996) Physiotherapy Student Clinical Education: the influence of subjective judgements on observational assessment, **Assessment and Evaluation in Higher Education**, 21(4), pp. 357-366.
- Arnell, P. & Sim, J. (1993) Measurement Validity in Physical Therapy Research, **Physical Therapy**, 73, pp. 102-110.
- Atkinson, P. & Coffey, A. (2002) Revisiting the relationship between participant observation and interviewing, in, J. F. Gubrium & J. A. Holstein (Eds.) **Handbook of Interview Research**. Thousand Oaks, CA, Sage.
- Bateson, N. (1984) **Data Construction in Social Surveys**. London, Allen and Unwin.
- Benett, Y. (1993) The Validity and Reliability of Assessments and Self-Assessments of Work-based Learning, **Assessment and Evaluation in Higher Education**, 18(2), pp. 83-94.
- Benner, P. (1984) **From Novice to Expert: Excellence and Power in Clinical Nurse Practice**. Menlo Park, CA, Addison-Wesley.
- Biggs, J. B. (2003) **Teaching for quality learning at university**. 2nd Ed. Buckingham, Open University/Society for Research into Higher Education.
- Brown, N. (2000) What are the criteria that mentors use to make judgements on the clinical performance of student mental health nurses? An exploratory study of the formal written communication at the end of clinical nursing practice modules, **Journal of Psychiatric and Mental Health Nursing**, 7, pp. 407-416.
- Bowling, A. (1996) **Research Methods in Health: Investigating Health and Health Services**. Philadelphia, Open University.
- Chartered Society of Physiotherapy (2002) **Validation Procedures for Qualifying Programmes in Physiotherapy**. London, Chartered Society of Physiotherapy.

- Chambers, M. A. (1998) Some Issues in the Assessment of Clinical Practice: A Review of the Literature. **Journal of Clinical Nursing**, 7, pp. 201-208.
- Chandler, J. (1991) Reforming nurse education 2 – implications for teachers and students, **Nurse Education Today**, 11, pp.89-93.
- Clouder, D. L. (2001) *Becoming Professional: An Exploration of the Social Construction of Professional Socialisation*. Unpublished Doctoral Thesis, Department of Continuing Education, University of Warwick.
- Clouder, D. L. & Dalley, J. (2002) The 'Safety Net': Fine-Tuning Preparation of Undergraduate Physiotherapists For Contemporary Professional Practice, **Learning in Health and Social Care**, 1(4), pp. 191-201.
- Crossley, J., Humphris, G. & Jolly, B. (2002) Assessing Health Professionals. **Medical Education**, 36, pp. 800-804.
- Currier, D. P. (1990) **Elements of Research in Physical Therapy**, 3rd Ed. Baltimore, Williams & Wilkins.
- Denzin, N. K. & Lincoln, Y. S. (2000) **Handbook of Qualitative Research**, (Eds.) 2nd Ed. London, Sage.
- Downing, A. M. & Hunter, D. G. (2003) Validating clinical reasoning: a question of perspective, but whose perspective? **Manual Therapy**, 8(2), pp117-119.
- English, I (1993) Intuition as a function of the expert nurse: A critique of Benner's novice to expert model. **Journal of Advanced Nursing**, 18, pp.377-393.
- Fowell, S. L., Southgate, L. J. & Bligh, J. G. (1999) Evaluating Assessment: the missing link? **Medical Education**, 33(4), pp 276-281.
- Girod, E. (1993a) Assessment of Competence in Clinical Practice: A Review of the Literature, **Nurse Education Today**, 13, pp. 83-90.
- Gould, A. (1994) The Issue of Measurement Validity in Health-care Research, **British Journal of Therapy and Rehabilitation**, 1 (2), pp. 99-103.
- Hammersley, M. (2003) Recent Radical Critiques of Interview Studies: any implications for the sociology of education? **British Journal of Sociology of Education**, 24(1), pp. 119-126.

- Hill, P. F. (1998) Assessing the Competence of Student Nurses, **Journal of Child Health Care**, 2, pp. 25-29.
- Janing, J. (1999) Interrater Reliability of Paramedic Student Field Performance Evaluations. **Prehospital Emergency Care**, 3, pp. 265-266.
- Janesick, (2000) The Choreography of Qualitative Research Design: Minuets, Improvisations and Crystallization. In N. K. Denzin & Y. S. Lincoln (Eds.) **Handbook of Qualitative Research**, (2nd Ed.), Thousand Oaks, CA, Sage, pp. 379-399.
- Lincoln, Y. S. & Guba, E. (1985) **Naturalistic Inquiry**. Thousand Oaks, CA, Sage.
- List, M. (1986) Physiotherapy: a mobile profession in healthcare. **Physiotherapy**, 72, pp. 122-124.
- Martell, R. (2005) Student placement tool cuts down on pen-pushing, **Physiotherapy Frontline**, April 20, pp. 8.
- Mason, J. (1996) **Qualitative Researching**. London, Sage.
- Maxted, M., Grant, J., Wooding, K. & Norcini, J. (2004) Assessing Healthcare Students in Practice Placements: An Overview of the Literature. Edinburgh, Association for the Study of Medical Education (ASME).
- McKinley, R. K, Fraser, R. C. & Baker, R. (2001) Model for directly assessing and improving clinical competence and performance in revalidation of clinicians, **British Medical Journal**, 322, pp. 421-431.
- Miller, G. (1990) The Assessment of Clinical Skills/ Competence/ Performance. **Academic Medicine**, 65, [Supplement], pp. 63-67.
- Morse, J. M. & Field, P. A. (1996) **Nursing Research: The Application of Qualitative Approaches**. London, Chapman Hall.
- Mulholland, J., Mallik, M., Moran, P., Scammell, J. & Turnock, C. (2005) **Making Practice-based Learning Work: An Overview of the Nature of the Preparation of Practice Educators in Five Health Care Disciplines**. Occasional Paper No. 6. London, Higher Education Academy Health Sciences and Practice Network
- Murphy, E., Dingwall, R., Greatbatch, D., Parker, S. & Watson, P. (1998) Qualitative research methods in health technology assessment: a review of the literature, *Health Technology Assessment*, 2(16),pp. 1-260. Available online at: <http://www.hta.nhsweb.nhs.uk/execsumm/summ216.htm> (Accessed 14 July 2005)
- Nicol, M. J., Fox-Hiley, A., Bavin, C. J. & sheng, R. (1996) Assessment of Clinical and Communication Skills: Operationalizing Benner's Model, **Nurse Education Today**, 16, pp.175-176.

Norman, I. J., Watson, R., Murrells, T., Calman, L. & Redfern, S. (2002) The validity and reliability of methods to assess competence to practise of pre-registration nursing and midwifery students, **International Journal of Nursing Studies**, 39, pp. 133-145.

Ohman, A., Hagg, K. & Dahlgren, L. (1999) Competent Women and Competing Professions: Physiotherapy educators' perceptions of the field. **Advances in Physiotherapy**, 1, pp. 59-72.

Quinn, F. M. (1988) **The Principles and Practices of Nurse Education**, 2nd Ed. London, Chapman Hall.

Ramsden, P. (1992) **Learning to Teach in Higher Education**. London, Routledge.

Rethans, J. J., Norcini, J. J., Baron-Maldonado, M., Blackmore, D., Jolly, B. C., LaDuca, T., Lew, S., Page, G. G. & Southgate, L. H. (2002) The relationship between competence and performance: implications for assessing practice performance. **Medical Education**, 36, pp. 901-909.

Richardson, L. (2000) New writing practices in qualitative research. **Sociology of Sport Journal**, 17, pp. 5-20.

Schlenker, B. R. & Weigold, M. F. (1992) Interpersonal Processes Involving Impression Regulation and Management. **Annual Review of Psychology**, 43, pp 133-168.

Sim, J. & Sharp, K. (1998) A Critical Appraisal of the Role of Triangulation in Nursing Research. **International Journal of Nursing Studies**, 35, pp.23-31.

Tobin, G. A. & Begley, C. M. (2004) Methodological Rigour within a Qualitative Framework. **Journal of Advanced Nursing**, 48(4), pp. 388-396.

Watson, T. (2005) Benefits of placement management, **Physiotherapy Frontline**, April 20, pp. 24. (letter).

Wragg, A., Wade, W., Fuller, G., Cowan, G. & Mills, P. (2003) Assessing the Performance of Specialist Registrars. **Clinical Medicine**, 3, pp. 131-134.

Appendix 1

Clinical Educator Interview Schedule

- Experience as a clinical educator? Yrs
- Experience of Coventry system? Yrs
- Approximate number of students with whom been involved?

- What do you think of the Coventry assessment process?
- Experience of other assessment systems?
- How does the Coventry system compare with others that you have used? Easier/harder to complete? More/less time consuming? Holistic/narrow?

- Do you think the two components of assessment relate to one another? How?
- Do you think that both components of assessment necessary? Why/why not?

- On average how much time do you spend directly observing students with patients during a five-week placement?
- What activities do you tend to observe? Eg: assessing, treating, comforting, talking to relatives, organising
- What strategies other than direct observation do you employ to help to gain insight into the student's performance? Eg: consulting with other physio staff or MDT members, listening to conversations, looking at notes
- What do you feel the performance mark tells you about a student's abilities?
- Can the placement type influence the student's ability to perform in any way?
- Eg: specialty, caseload, use of protocols, models of supervision etc
- What other factors do you think can have an impact on performance?

- On average how much time do you spend discussing patient management with students?
- Are you able to develop sufficient insight into clinical reasoning capabilities of the student during ad hoc or informal discussions throughout the placement?
- How else do you gain insight into students' decision-making processes? Eg: questioning, reading notes, tutorials
- What do you feel the clinical reasoning mark tells you about a student's abilities?

- Do you feel that success in performance and clinical reasoning components depends on the same qualities?
- Could you award marks for clinical reasoning on the basis of insight developed during the placement? Is the viva necessary?
- Can placement type influence students' clinical reasoning capacity in any way? Eg: specialty, caseload, use of protocols etc

- Do students' performance component marks generally relate to the clinical reasoning marks?

- What factors can have an impact on the clinical reasoning viva? Eg: thorough preparation, nerves, choice of patients etc
- Do you feel that the clinical reasoning viva helped to deepen the student's understanding of the management of chosen patients? How? Why?
- Does the clinical reasoning viva afford a different degree of insight into the students reasoning capability?
- Are you aware whether or not students' increased understanding contributes towards improved management of patients?
- Do you feel that the clinical reasoning vivas help or hinder in developing students' overall clinical reasoning capabilities?
- Is the inclusion of a clinical reasoning viva applicable to current practice?
- What generally is your input to the viva?
- Does the viva stretch you in any way?
- Overall, do you think that the current system is fair? Could we be challenging our students to a greater extent than other physiotherapy programmes with respect to assessment on practice placements?
- How might the system be improved?
- Any further comments?

Visiting Tutor Interview Schedule

- Experience as a visiting tutor? Yrs
- Experience of Coventry system? Yrs
- Approximate number of students with whom been involved?

- What do you think of the Coventry assessment process?
- Have you experienced any other assessment systems?
- How does the Coventry system compare with others with which you have been involved? Eg: Easier/harder to complete? More/less time consuming? Holistic/narrow?

- Do you think the two components of assessment relate to one another? How?
- Do you think that both components of assessment necessary? Why/why not?

- On average how much time do you spend directly observing students with patients during a five-week placement?
- How much time do you think educators spend directly observing student performance?
- What do you feel the performance mark tells you about a student's abilities?
- Can the placement type influence the student's ability to perform in any way? Eg: specialty, caseload, use of protocols, models of supervision etc

- On average how much time do you spend discussing patient management with students?
- Do you develop sufficient insight into clinical reasoning capabilities of the student during ad hoc or informal discussions throughout the placement?
- How much time do you think clinical educators spend discussing decision-making regarding patients with the student? After every patient? Once a day?
- What do you feel the clinical reasoning mark tells you about a student's abilities?

- Do you feel that success in performance and clinical reasoning components depends on the same qualities?
- In your opinion could clinical educators award marks for clinical reasoning on the basis of insight developed during the placement? Is the viva necessary?
- Can placement type influence the student's clinical reasoning capacity in any way? Eg: specialty, caseload, use of protocols, models of supervision etc

- Do students' performance component marks generally relate to the clinical reasoning marks?
- What factors can have an impact on the clinical reasoning viva? Eg: thorough preparation, nerves, choice of patients, models of supervision etc

- Do you feel that the clinical reasoning viva helps to deepen students' understandings of the management of chosen patients? How? Why?

- Does the clinical reasoning viva afford a different degree of insight into the students reasoning capability?
- Are you aware whether or not the student's increased understanding contributes towards improved management of patients?
- Do you feel that the clinical reasoning vivas help or hinder in developing students' overall clinical reasoning capabilities?
- Is the inclusion of a clinical reasoning viva applicable to current practice?
- What generally is your input to the viva?
- Does the viva stretch you in any way?
- Overall, do you think that the current system is fair? Could we be challenging our students to a greater extent than other physiotherapy programmes with respect to assessment on practice placements?
- How might the system be improved?
- Any other comments?

Student Interview Schedule

- Year of course
- What do you think of the Coventry placement assessment process?
- How does the Coventry system compare with others that you have heard of? Eg: easier/harder to complete? More/less time consuming? Holistic/narrow? More/less demanding? More/less stressful?
- Do you think the two components of assessment relate to one another? How?
- Do you think that both components of assessment necessary? Why/why not?
- On average how much time do clinical educators spend directly observing you with patients during a five-week placement?
- What activities do they tend to observe? Eg: assessing, treating, comforting, talking to relatives, organising
- What strategies other than direct observation did s/he employ to help to gain insight into your performance? Eg: consulting with other physio staff or MDT members, listening to conversations, looking at notes, input at case conferences
- Did the type of placement influence your ability to perform in any way? Eg: specialty, caseload, use of protocols, models of supervision etc
- What makes for a successful performance mark?
- On average how much time do clinical educators spend with you discussing patient management?
- Do you feel that clinical educators are able to develop sufficient insight into your clinical reasoning capabilities during ad hoc or informal discussions throughout the placement?
- How else did your clinical educator gained insight into your decision-making processes? How? Eg: questioning, reading notes, tutorials
- Estimate the frequency with which you discussed decision-making regarding patients with your educator? After every patient? Once a day?
- In your opinion could your clinical educator have awarded a mark for clinical reasoning on the basis of insight developed during the placement? Was the viva necessary?
- Did the type of placement influence your clinical reasoning capacity in any way? Eg: specialty, caseload, use of protocols, models of supervision etc
- What factors had an impact on the clinical reasoning viva? Eg: thorough preparation, nerves, choice of patients etc
- What makes for a successful clinical reasoning viva?
- Did the clinical reasoning viva help to deepen your understanding of the management of chosen patients? How? Why?
- Does the clinical reasoning viva afford a different degree of insight into the students reasoning capability?

- Did your increased understanding contribute towards improved management of those patients?
- Do you feel that the clinical reasoning viva helped you to develop your overall clinical reasoning capabilities in preparation for qualification?
- Is the inclusion of a clinical reasoning viva applicable to current practice?
- Overall, do you think that the current system is fair? Could we be challenging our students to a greater extent than other physiotherapy programmes with respect to assessment on practice placements?
- How might the system for assessing professional practice be improved?

DLC updated 17/12/04